Appln Ser No. 10/791,603
Amdt dated April 9, 2008
Reply to Final Rejection of October 10, 2007

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REMARKS

Claims 1 to 14 remain in the application.

The invention presents an application-layer approach for providing multicast
services for distributing content to mobile users traversing networks with diverse
multicast capabilities. The application-layer solution allows third-party service providers
to support multicast services across access and backbone networks with incompatible
multicast capabilities. The multicast architecture of the present invention overlays on the
existing backbone and access network but takes advantage of underlying multicast
capabilities when possible. In addition, the architecture of the present invention requires
only limited control and knowledge of the underlying capabilities of the access and
backbone networks.

Multicast proxies are established in the backbone network and at the edges of the
access networks. These proxies relay information from the media server to the users
across diverse networks. The proxies along with the user devices will form virtual
networks that will be under the full control of the service provider.

The backbone proxies form the virtual network using tunnels between
neighboring backbone proxies.

In contrast, the cited references do not use multicast for content distribution but
rather as a neighborhood discovery mechanism. The cited references also fail to describe
the switching between multicast and non-multicast (tunneling) as mobile units move
between different networks.

Claims 1-14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over
Borella et al (US Patent 6697354) and further in view of Marquette et al (US Pub
2002/0156900).

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Borella et al fails to show a telecommunications network for providing multicast services for distributing content to mobile users comprising a virtual network of backbone proxies as claimed by Applicants in claim 1. Borella et al also fails to teach or suggest a telecommunications network for providing multicast services to mobile users as claimed by Applicants in claim 13. Claim 13 claims, in part, "said local proxies receiving said request and forwarding said request to said media server through said virtual network; and said local proxies sending content to said mobile users". The Examiner agrees at page 3 of the Office Action which reads that "Borella et al does not explicitly teach a telecommunications network with a server that provides content when providing multicast services to mobile users."

Further with regard to claim 1, the backbone proxies do not forward packets to the mobile user using the home agent and foreign agent concept (as in Borella et al.). The proxies route multicast packets such that all users which are in the multicast group receive the multicast packets. There is no need for home subnet concept for the mobile users. There is no concept of roaming away for home subnet and using foreign agents since the multicast group has no home subnet concept. The mobile users with the same multicast group are tracked via the multicast routing protocol and IGMP and do not require use of Mobile IP. Forwarding of packets is automatically taken care of via the multicast routing using the virtual network of backbone proxies.

Marquette et al proposes ways to provide content to mobile users but not necessarily in an IP multicast fashion. That is, multiple users requesting the same content can result in the content server sending out multiple streams of the same content. In IP multicast, the point is to avoid duplication when possible to reduce network load but still reach the users that want the same content. Marquette et al. does not consider using multicasting in this context.

In addition, requesting clients always ask for the same multicast content in the same format but the route, network path and tunneling scheme to reach this content to the mobile user can change based on the mobile user's current access network's native

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multicast capability. The dynamic switching of mobile users to receive multicast content with or without tunneling as needed is unique to Applicants' claimed invention.

The Office Action continues that it would have been obvious to one of ordinary skill of the art at the time the invention was made to incorporate a protocol independent control module for providing applications and services to requesting clients across multiple protocol formats, as taught by Marquette et al.

Marquette et al is not concerned with mobile users while Borella et al considers mobile users, therefore, it is respectfully submitted that one skilled in the art would not combine the references in the manner suggested by the Examiner. It is only with the use of hindsight reconstruction provided by Applicants' teachings that one would even look to Borella et al and Marquette et al as was done by the Examiner. Certainly, one skilled in the art would not be motivated to combine the references to solve the problem in the manner claimed by Applicants in claims 1-14. The problem of multicasting from a media server to mobile users is very different from the load balancing and resource application of Marquette et al.

The application-layer multicast architecture of the present invention allows a service provider to efficiently multicast information from a media server, acting as the information source and located in the backbone network, to the user roaming across different access networks. (Page 4, para. 13)

In claim 2 tunneling is not used to forward packets to mobile users moving through different foreign subnets as in Borella et al. The claimed invention does not use the concept of foreign agent and home agent. Here tunneling is used when a part of the current network path, determined via the multicast routing protocol, from content server to mobile user cannot support full IP multicast.

In claims 3 and 4 tunneling is used in the absence of native IP multicast, not for forwarding packets between foreign agents and home agents in the Mobile IP sense.

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With regard to claims 5 and 6, Marquette et al (Page 12, Para 136-138) uses multicast for initial box location discovery. This is different than using multicast for efficient content distribution to multiple users. There is no concept of a virtual network of backbone proxies as claimed by Applicants used specifically for multicast content distribution in Marquette at al.

Regarding claim 7, Marquette et al. uses multicast to send out 'who is here' queries and 'are you alive' broadcasts. In the claimed invention local proxies broadcast or advertise multicast services. This multicast service advertisement include such things as the IP multicast capability of the local proxy's network, and the multicast content servers and multicast sessions that can be reached via this proxy.

With regard to claim 8, Marquette et al. does not use multicast for content distribution but only for initial location of monitor boxes. There is no concept of a virtual network of backbone proxies as claimed by Applicants used specifically for multicast content distribution in Marquette at al.

With respect to claim 9, in Marquette et al. (page 4, Para 57; page 8 para 98) there is no mention of multicast or tunneling. The claimed invention uses tunneling when the path between proxies or between proxy and mobile user is not multicast-capable. Tunneling is used so mobile users can receive multicast content. However, when the access network does have multicast, and the mobile user moves into such an access network, it does not need to have tunneling. There is dynamic switching at the mobile user based on awareness of the local proxy and access network capability.

In Marquette et al., IP multicast is used only for discovery queries and not for multicast content distribution in contrast to the invention claimed in claim 10.

Borella et al. uses the external network address and port number for network translation purposes. In addition, Marquette et al. uses address in context of SIP. In claim

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11 addresses are used for multicast session uniqueness and does not require SIP for
multicast services. Due to the limited number of multicast addresses available, it is
necessary to maintain uniqueness of a multicast session so the claimed invention uses the
multicast group address plus the multicast source address for unique identification. The
addresses are not used for distributed network address translation as in Borella et al.

Marquette et al. defines location services as mapping of application or service
program to a specific URL or IP address. The location service is used to find the IP
address of a particular service program. In claim 12 location services are used to
determine the geographical location (GPS) of mobile users. The geographical location
information is used to provide content tailored to that geographic area – location-based
content such as information on nearby points of interest.

In claim 13 the local proxies can send requests through pre-configured virtual
network of existing backbone proxies.

In claim 14 the content can be multicast and use multiple paths to reach multiple
access networks and mobile users. Some paths may have parts where IP multicast is not
available so these legs of the multicast route would use tunneling to transport the
multicast content to the next multicast-enabled point or to the mobile user.

It is respectfully submitted that Borella et al and Marquette et al cannot be
combined as suggested by the Examiner nor is there any motivation to combine the
references in the manner suggested by the Examiner in order to render claims 1-14
obvious under 35 U.S.C. 103 (a). Hence, claims 1-14 as currently amended should be
deemed allowable over the art of record.

Entry of this amendment is respectfully requested since it places the claims in
condition for allowance or alternatively, places the claims in better condition for
consideration on appeal.

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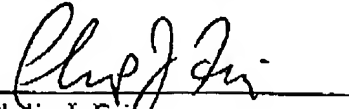Reply to Final Rejection of October 10, 2007

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Reexamination, reconsideration and allowance of claims 1-14 as amended remaining in the application are respectfully requested.

Authorization is hereby given to charge Deposit Account No. 02-1822 the fee due under 37 CFR 1.17(a) of $1050.00 for a three (3) month extension of the time to reply to the Final Rejection.

Respectfully submitted,

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